

Abstract

Enhanced performance is achieved by combining channel coding with the space-time coding principles. With K *synchronized* terminal units transmitting on N antennas to a base station having $M \geq K$ receive antennas, increased system capacity and improved performance are attained by using a concatenated coding scheme where the inner code is a space-time block code and the outer code is a conventional channel error correcting code. Information symbols are first encoded using a conventional channel code, and the resulting signals are encoded using a space-time block code. At the receiver, the inner space-time block code is used to suppress interference from the other co-channel terminals and soft decisions are made about the transmitted symbols. The channel decoding that follows makes the hard decisions about the transmitted symbols. Increased data rate is achieved by, effectively, splitting the incoming data rate into multiple channels, and each channel is transmitted over its own terminal.